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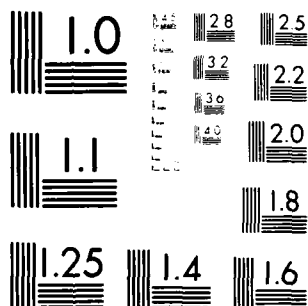
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EXTENDED STATISTICAL ANALYSIS  
OF PROJECT UPGRADE 83

FINAL REPORT

JUNE 1984

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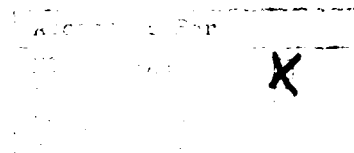
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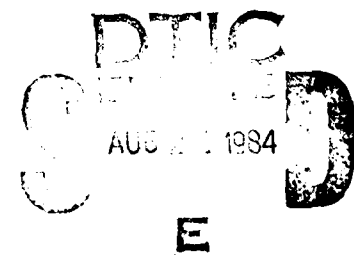
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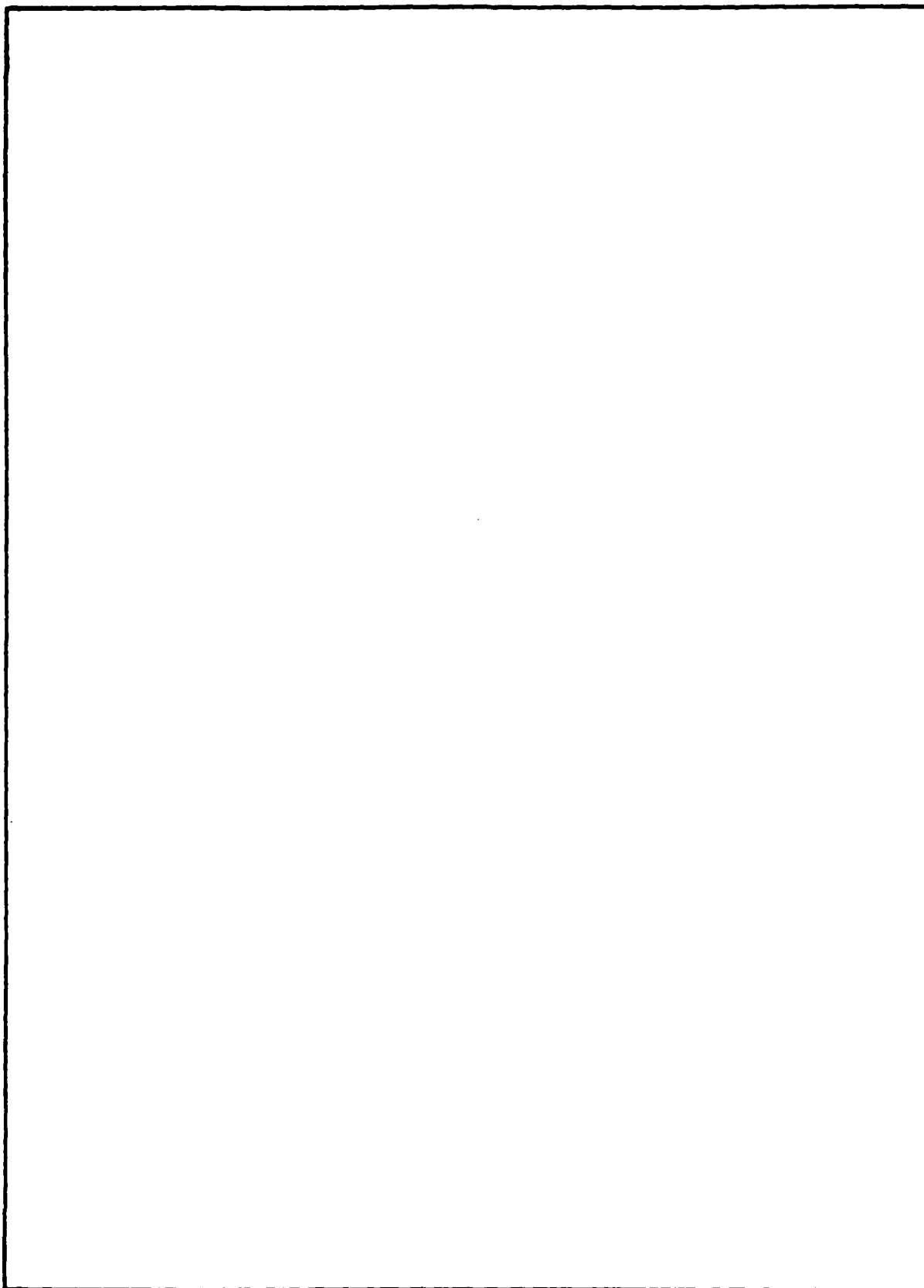


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| This study provided a statistical analysis of the Navy's Project UPGRADE 83,<br>a program for administrative early discharge of first term enlistees. The<br>study analyzed the effect of UPGRADE 83 on the overall Navy early discharge<br>profile for first-term enlistees, and identified enlistee characteristics<br>and Navy-related factors which distinguished UPGRADE members from comparison<br>groups. |                       |  |

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## EXECUTIVE SUMMARY

As in Project UPGRADE in Fiscal Years 1981 and 1982, Project UPGRADE in 1983 resulted in a significant increase in first-term attrition, with little substitution of UPGRADE discharges for other types of early discharges. That is, most enlistees discharged under UPGRADE 83 would not have been discharged under the regular early discharge authority.

Some differences between UPGRADE 83 and the earlier UPGRADE projects, however, can be pointed out. For one, the population size of UPGRADE 83 is relatively much smaller. This result likely stems from the impact of the previous UPGRADE 81 and 82 programs diminishing the pool of probable candidates for UPGRADE 83. Another distinction is that a greater proportion of the UPGRADE 83 discharges had completed only six to 18 months of the term of enlistment than in the previous UPGRADE projects. This result also likely stems from a diminished pool of UPGRADE candidates.

As in the previous UPGRADE programs, several factors and characteristics distinguish UPGRADE 83 cases from either Early Discharge or Non-Discharge cases, including:

- Sea/Shore Duty Status: A much higher percent of UPGRADE cases were in sea duty status relative to the Early Discharge groups.
- Disciplinary Status: Early Discharge subjects tended to present more severe disciplinary problems than UPGRADE subjects did.

- Drug-Related Incidents: In contrast to the previous UPGRADE programs, the UPGRADE 83 group had a lower incidence of drug-related offenses. UPGRADE 82 coincided with the CNO's major drug initiative in 1982, thereby resulting in a substitution effect for the UPGRADE program in that year.
- UA Incidence: UPGRADE 83 had a slightly higher overall UA rate than Early Discharge 83, but the latter had a worse record in terms of repeated UA offenses by the same individual and UA's occurring while the member is on active duty (as opposed to being on liberty or leave). Also, the UA record for UPGRADE 83 improved relative to UPGRADE 82/81.
- Performance Evaluation, NJP's and UA's Less than 24 hours: Performance evaluation marks tended to be lower for UPGRADE 83 relative to Early Discharge 83, while NJP's (non-judicial punishment) and UA's less than 24 hours tended to be higher. These indicators for UPGRADE 83, though, improved relative to UPGRADE 82/81.
- High School Diploma and AFQT Scores. UPGRADE 83 had a lower percent of individuals with regular high school diploma and lower AFQT scores compared to either the Early Discharge or Non-Discharge Study groups. The differences for UPGRADE 83, though, were less than they were for UPGRADE 82/81.
- NJP's: The number of NJP's on a person's microfiche record was the most effective variable to separate UPGRADE cases from Non-Discharge cases. High school diploma status and AFQT scores also contributed to the separation, but to a lesser extent.
- Sociodemographic Characteristics: UPGRADE cases tended to be similar to Non-Discharge cases in terms of age, number of dependents, and race. Conversely, Early Discharge cases tended to be somewhat older and have higher proportions of married members and whites.

Important variables found not to make any distinction between UPGRADE 83 and Non-Discharge cases were:

- Race
- SCREEN scores

There was virtually no difference between UPGRADE 83 and Non-Discharge groups in terms of the statistical results for these variables. The implications of this are:



- UPGRADE 83 was even-handed in its treatment of minorities.
- The current SCREEN index is ineffective as a tool for screening likely UPGRADE subjects from applicants qualified for Navy enlistment.

Overall, we find that UPGRADE individuals represent marginal cases in terms of either performance or behavior in the Navy, thereby fulfilling the intent of the program.

#### ACKNOWLEDGEMENTS

As in the previous Project UPGRADE Study, OP-135 served as the technical monitor of the present study. NMPC-164 again performed the necessary data extraction from Navy personnel data files. Their support is gratefully acknowledged.

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## I. BACKGROUND

### A. Project UPGRADE FY81 and FY82

Project UPGRADE was implemented first in FY 1981 to permit unit commanding officers to administratively discharge individuals whose performance routinely migrated between unsatisfactory and marginal and whose proper supervision was requiring a disproportionate amount of time, energy, and resources. UPGRADE was targeted to multiple unauthorized absence (UA) offenders and others who the commanding officer believed were an unwarranted burden to the command. The intent of the program was to demonstrate that the Navy's leaders were serious about upgrading the fighting quality of the Navy and to increase the amount of time officer and enlisted leaders had available to spend with their productive people. The authority to discharge members at the convenience of the government, though, was not new; such authority already existed.

The eligibility criteria for UPGRADE discharges were:

1. Paygrade E-3 or below.
2. Serving in first enlistment.
3. Completed recruit training.
4. Served onboard (then) current command at least 60 days.
5. Considered marginal performer because of one or more of the following:
  - a. Failure to maintain required proficiency in rate.
  - b. Performance which was non-contributory to unit

readiness and mission accomplishment as specifically evidenced by a below-average performance rating or demonstrated incapacity to meet effectiveness standards.

c. Created an administrative burden to the commands due to military or disciplinary infractions and could not, without disproportionate effort, be turned into a productive member of the Navy. In particular, any member who had been UA four or more times should have been processed for an UPGRADE discharge unless a solid basis for retention existed in the opinion of the CO. Discharge quotas were not set, but an eight-week window (2JUL81-31 AUG81) was established for discharge actions under UPGRADE authorization. Approximately 3900 members were discharged under the FY81 UPGRADE effort.

Although Project UPGRADE had been originally conceived and implemented for one-time execution, positive feed back from Navy leaders led to a determination by the CNO to implement it again in FY 1982. This time, the guidance was somewhat modified (e.g., three or more instances of UA, rather than four or more, were cited as the ... "should be processed..." criteria) and the action window was 16JAN-15MAR. The number of personnel discharged under the FY 82 UPGRADE authorization almost reached 5000.

#### B. Project UPGRADE FY83

A third Project UPGRADE was implemented during Fiscal Year 1983 between 15 February and 15 April. Additional guidance was given for commanding officers to administratively discharge

members. In particular, the CO had to cite a cause for the discharge, such as misconduct or unsatisfactory performance. As with the previous UPGRADE programs, the criteria for discharge included that the member must be an E-3 or below, have been in the Navy at least six months, and in the command at least 60 days. However, the number of discharges was to bear no relation to the number discharged under the previous programs.

#### C. Summary of Statistical Results of FY 81/82 Programs

Information Spectrum, Inc. performed an extended statistical analysis of Project UPGRADE FY81 and FY82 results. The objectives of the analysis were to:

- Determine the effect of UPGRADE on the overall Navy early discharge profile for first-term enlistees.
- Determine characteristics and factors which distinguish UPGRADE members from:
  - Other early discharges.
  - Enlistees not discharged early from the Navy.

The major components of the study methodology consisted of:

- Aggregate data analysis of monthly/annual first-term attrition.
- Microdata analysis of six study comparison groups, including UPGRADE, other early discharge, and non-discharge cases.
- Descriptive analysis, including frequency distributions and mean values.



- Multivariate technique of discriminant analysis to distinguish UPGRADE cases from comparison group cases.

The overall finding from these analyses was that UPGRADE accomplished what it was intended to do. That is, marginal performers among first-term enlistees were discharged early from the Navy. More specific findings were:

- UPGRADE resulted in a significant increase in first-term attrition for the periods in which it was in effect; i.e., little substitution of UPGRADE discharges for other early discharges occurred.
- UPGRADE subjects were marginal performers on the whole while non-UPGRADE Early Discharge cases represented more severe disciplinary problems.

Several factors were identified which distinguished UPGRADE cases from either Early Discharge cases or Non-Discharge cases, including:

- Performance evaluation marks in the enlistee's record.
- Sea/shore duty status (much higher percent of UPGRADE cases were on sea duty status).
- Disciplinary status (Early Discharge subjects tended to be more of a discipline problem relative to UPGRADE).
- UPGRADE 81 had a higher UA rate relative to Early Discharge, but UPGRADE 82 had a lower rate.
- High school completion (UPGRADE had a much lower rate

of high school completion).

- o UPGRADE cases tended to be more similar to Non-Discharge than Early Discharge cases in terms of race, sex, and age.

D. UPGRADE 83 Study Objectives and Issues

Similar to the analyses of the previous UPGRADE Programs, the overall objective of this study was to perform an extended statistical analysis of Project UPGRADE results for FY1983 to determine:

- o The effect of UPGRADE FY83 on the overall Navy first-term population profile and discharge rate.
- o Factors which distinguish UPGRADE FY83 subjects from peer groups.

More specifically, key study questions addressed by the analysis were:

1. As in the case of Project UPGRADE 81 and 82, did Project UPGRADE 83 result in an overall increase in the number of all early discharges of first-term enlistees?
2. As in the case of Project UPGRADE 81 and 82, did certain institutional factors and enlistee characteristics distinguish the UPGRADE 83 population from other early discharges and non-discharges?
3. As in the case of Project UPGRADE 81 and 82, did

UPGRADE 83 subjects fare worse in terms of work performance relative to behavior record, in comparison to other early discharges?

4. Could UPGRADE-quality subjects be effectively screened prior to entry in the service?
5. How did minorities fare with Project UPGRADE, comparatively speaking? Were there intervening factors which affected minority representation in Project UPGRADE?

## II. METHODOLOGY

Similar to the analyses of UPGRADE FY81 and FY82 three major categories of data were analyzed in this study:

- Aggregate monthly and annual data on Navy first-term attrition.
- Individual (micro) enlistee data derived from computerized data files on UPGRADE and other Early Discharge subjects.
- Individual enlistee data derived from samples of enlistee microfiche records.

The analysis of monthly and annual data is presented first to provide an overview of Navy attrition before proceeding to the more detailed analysis of the microdata. The analysis of the aggregate data, in particular, investigated the effect of Project UPGRADE on the trend of early discharge of first-term enlistees.

For the analysis of microdata, the UPGRADE FY83 population group was analytically compared against two non-UPGRADE Early Discharge groups and one Non-Discharge group. The population sizes of these target and comparison groups are presented in Table II-1, while the time frames of the groups are portrayed in Figure II-1. The Early Discharge groups were:

- Early Discharge 83: All early discharges in the reporting quarter immediately succeeding UPGRADE FY 83, excluding those who had served six months or less on active duty and excluding medical and disability-related discharges.
- Early Discharge II: All early discharges during the fourth quarter FY82 excluding those who had served six months or less on active duty and excluding medical and disability related discharges.

Similar to the previous study, the possibility of substitution effects between UPGRADE discharges and Early Discharges occurring

TABLE II-1  
POPULATION SIZES OF STUDY GROUPS

| <u>GROUP</u>       | <u>POPULATION SIZE</u> |
|--------------------|------------------------|
| UPGRADE 83         | 3101*                  |
| Early Discharge 83 | 3323                   |
| Early Discharge 82 | 4223                   |
| Non-Discharge 83   | 3197                   |

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\* The total number of individuals discharge under UPGRADE 83 was actually 3,210. The study group size is a little less due to the exclusion of records which indicated length of active duty as being six months or less.

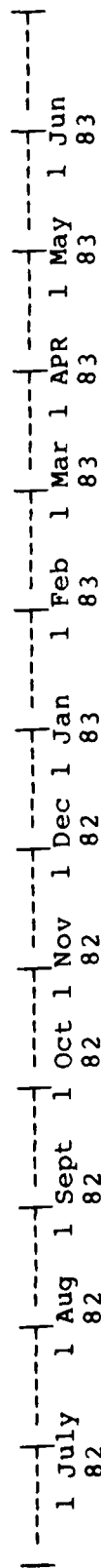
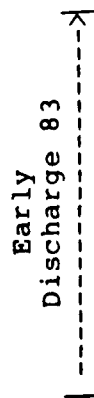
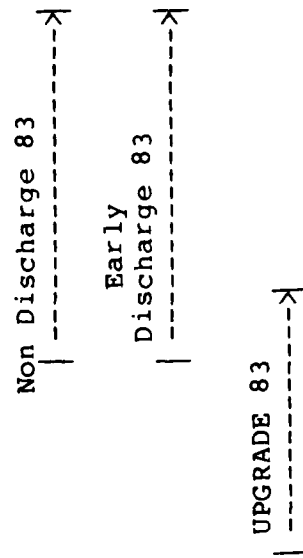


FIGURE II-1  
Time Frames of Study Groups

during the same approximate period as UPGRADE was considered in the selection of the comparison groups. Although the previous study demonstrated the lack of a substitution effect, repeated use of the previously unannounced UPGRADE program could affect an increase in substitution of UPGRADE for the regular Early Discharge program. For one, repeated occurrence of UPGRADE could affect more liberal use of the program on the part of the CO's. Also, annual implementation of UPGRADE over a three-year period is likely to diminish the pool of probable candidates for UPGRADE.

Unlike the previous study, the Early Discharge groups in this study excluded medical and disability-related discharges. These types of early discharges are less comparable to the UPGRADE discharge, and therefore, were excluded as an improvement in our selection methodology.

The Non-Discharge group selected for comparative analysis was:

- Non-Discharge 83: A random sample of non-discharge first-term (E-1 to E-3) enlistees with onboard active duty status in the reporting quarter immediately succeeding UPGRADE 83, excluding members who had served only six months or less on active duty.

The criteria for selection of this group were identical to the criteria for selection of the Non-Discharge groups in the previous UPGRADE analysis study, with one exception. The one exception is that the selection of Non-Discharge enlistees for the present study is restricted further to include only those who were in onboard active duty status (which excluded students,

patients, prisoners, and others who are not "onboard"). This additional restriction enhanced the comparability of the Non-Discharge and UPGRADE group, given that UPGRADE candidates also must have been in onboard active duty status.

Like the previous study, several relevant variables reflecting both enlistee characteristics and institutional factors were extracted from the Navy's Survival Tracking File (STF). The STF data derive from the larger Enlistee Master Record (EMR) file and maintains a historical profile on each enlistee on a quarterly basis. Basic statistics were used to examine bivariate relationships between UPGRADE vs non-UPGRADE membership and the selected study variables. In the subsequent part of this study, discriminant analysis and analysis of microfiche record data was also performed as well.

Additional analyses were performed on samples of individual enlistee microfiche records. These samples were derived from the UPGRADE and selected Early Discharge population groups. The analyses focused on variables not available from the computerized data files, but relevant to the individual's performance and behavior record. These variables included:

- Performance evaluation marks
- Drug-related incidences
- Non-judicial punishment
- UAs less than 24 hours

The analyses performed on the sample microfiche records paralleled the analyses of the data files derived from the STF.



### III. TREND ANALYSIS

This section presents the results of the study's analysis of monthly and annual attrition totals within the first term enlisted population. The objective of the analysis was to determine UPGRADE's impact on total attrition on both a monthly and annual basis. Total attrition is defined here to include all first-term enlistees discharged before completing the first term of enlistment.

Figure III-1 presents the monthly totals of enlisted first term attrition from January 1981 to June 1983 by major reason for discharge. In Figure III-1 the broad category of "unsuitable" includes the following categories (which are themselves aggregates of more detailed reasons):

- Personality disorder
- Alcohol/drug involvement
- Court involvement
- Burden to command
- Unsatisfactory performance
- Misconduct
- Good of the service

The category of "fraud/error" comprises fraudulent enlistment and erroneous enlistment. "Disabled" comprises disability discharges, pregnancy, and other medical discharges. Other categories (e.g., death, promotion to officer status) were not included because their numbers were relatively small and/or they did not readily fit into the three broad categories specified.

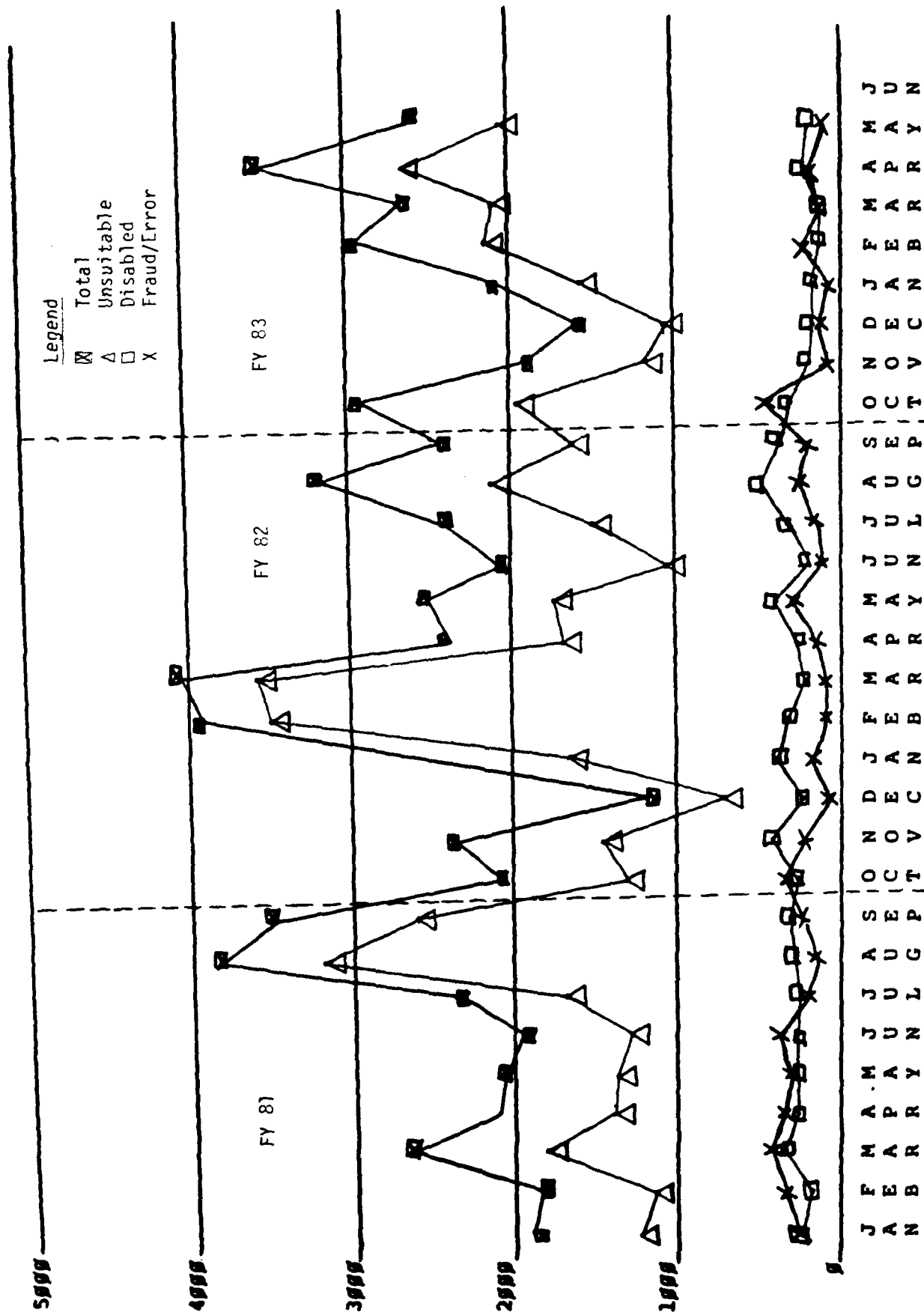


FIGURE III-1  
Monthly Attrition for First Term Enlistees, Fiscal Years 1981 to 1983

The overall total attrition trend, displayed in Figure III-1, shows the largest peaks occurring during the three UPGRADE time periods, with the UPGRADE 83 period showing the smallest peak of the three upturns. The largest category of "unsuitable" closely follows the total trend while the smaller categories of "fraud/error" and "disabled" present flat, stable trends. The UPGRADE discharges fall into the broad category of "unsuitable."

In Figure III-1 the impact of UPGRADE 83 on total attrition appears to be less than the previous UPGRADE programs. This does not necessarily imply that a significant number of UPGRADE subjects were substituted for the regular early discharge program. For one, the pool of probable candidates for UPGRADE 83 was likely less relative to UPGRADE 82 and 81, due to the impact of the earlier UPGRADE programs. Also, in Figure III-2, UPGRADE 83 has the apparent significant effect of increasing total attrition on a percentage basis. Figure III-2 presents an annual perspective of total attrition trends for Fiscal Years 1977 to 1983. The solid line in Figure III-2 shows the actual total attrition while the broken line segment reflects attrition without the UPGRADE totals. Without the UPGRADE numbers in the total, the overall attrition trend shows a smooth leveling off in the most recent years. With UPGRADE, though, the trend shows decided upturns and higher levels of attrition.

The basic conclusion to be drawn from these graphic analyses is that all three UPGRADE programs resulted in total first term enlisted attrition greater than what would have occurred in its absence.

ENLISTED FIRST TERM ATTRITION  
AS % OF FIRST TERM POPULATION

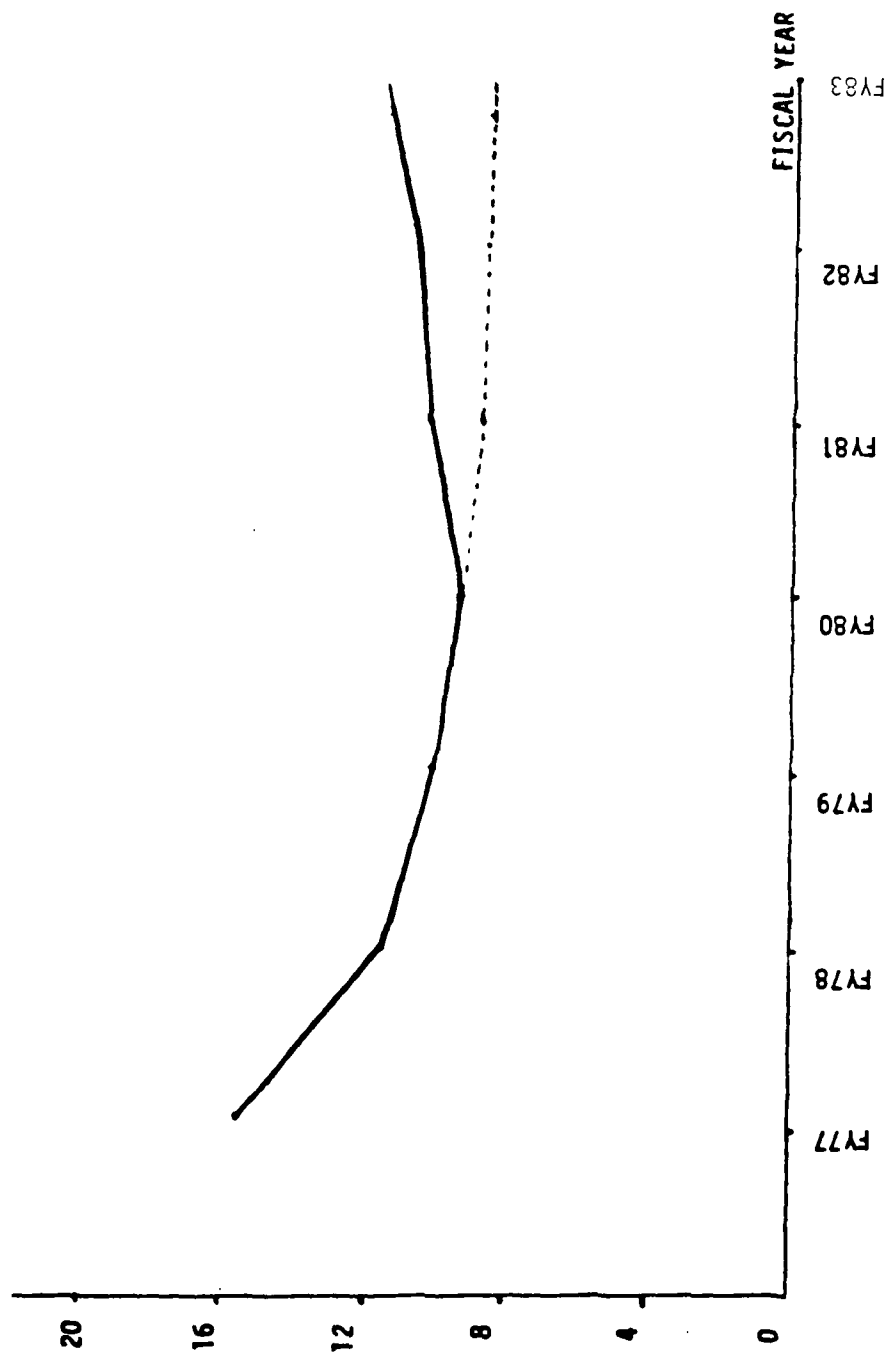


FIGURE III-2  
Annual Enlisted First Term Percent Attrition, Fiscal Years 1977 to 1983

Legend:  
— Actual Trend  
---- Trend Without UPGRADE

#### IV. COMPARATIVE ANALYSIS OF STUDY GROUPS

UPGRADE 83 resulted in a significant increase in first term attrition for the periods in which it was in effect as indicated in the previous section. Descriptive analysis of individual enlistees in this study supported the hypothesis that UPGRADE 83 and Early Discharge operated independently of each other. This analysis also identified Navy-related factors and enlistee characteristics which distinguished UPGRADE subjects from Early Discharge and Non-Discharge subjects. Tables III-1 and III-2 present percent distributions and mean values of selected variables, respectively, by study group. (For comparison purposes, Appendix A contains the analogous tables from the previous UPGRADE analysis report.)

##### A. Summary

In summary, factors or characteristics which distinguished UPGRADE from Early Discharge and Non-Discharge included:

- Sea/Shore Duty Status: A much higher percent of UPGRADE subjects was on sea duty thirty (30) days prior to date of separation compared to either Early Discharge group. However, this effect is less pronounced for the Non-Discharge group relative to the previous study in that a higher proportion of Non-Discharge enlistees were on sea duty, due to the fact that the study sample was restricted to members with onboard active duty status.

TABLE IV-1

## Percent Distribution of Enlistees by Selected Variables

|                      | <u>UPGRADE</u><br><u>83</u> | <u>Early Dis-</u><br><u>charge 83</u> | <u>Early Dis-</u><br><u>charge 82</u> | <u>Non-Dis-</u><br><u>charge 83</u> |
|----------------------|-----------------------------|---------------------------------------|---------------------------------------|-------------------------------------|
| Active Duty          |                             |                                       |                                       |                                     |
| - 6 to 18 mos.       | 38.4%                       | 28.0%                                 | 21.1%                                 | 36.7%                               |
| - 19 to 30 mos.      | 34.9                        | 37.3                                  | 32.1                                  | 41.1                                |
| - More than 30 mos.  | 26.7                        | 34.8                                  | 46.9                                  | 22.2                                |
| Pay Grade            |                             |                                       |                                       |                                     |
| - E1                 | 20.9                        | 35.2                                  | 41.7                                  | 5.6                                 |
| - E2                 | 37.4                        | 30.7                                  | 28.8                                  | 25.0                                |
| - E3 (or higher)     | 41.7                        | 34.1                                  | 29.5                                  | 69.4                                |
| Sea Duty             |                             |                                       |                                       |                                     |
| - Sea                | 84.8                        | 48.1                                  | 37.1                                  | 71.9                                |
| - Shore              | 15.2                        | 51.9                                  | 62.9                                  | 28.1                                |
| Disciplinary Actions |                             |                                       |                                       |                                     |
| - None               | 96.4                        | 75.6                                  | 85.4                                  | 98.2                                |
| - One or more        | 3.6                         | 24.4                                  | 14.6                                  | 1.8                                 |
| UA Incidence         |                             |                                       |                                       |                                     |
| - None               | 74.1                        | 76.1                                  | 87.1                                  | 89.6                                |
| - One                | 15.4                        | 10.5                                  | 4.0                                   | 5.7                                 |
| - Two or more        | 10.5                        | 13.4                                  | 8.9                                   | 4.7                                 |
| UA Type              |                             |                                       |                                       |                                     |
| - Liberty or Leave   | 59.3                        | 53.1                                  | 50.9                                  | 64.7                                |
| - Duty               | 40.7                        | 46.9                                  | 49.1                                  | 35.3                                |

TABLE IV-1

Percent Distribution of Enlistees by Selected Variables (Cont'd)

|                       | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge I 83</u> | <u>Early Dis-<br/>charge II 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|-----------------------|-----------------------|-----------------------------------|------------------------------------|-------------------------------|
| High School Diploma   |                       |                                   |                                    |                               |
| - No Diploma          | 25.1%                 | 24.0%                             | 21.3%                              | 12.0%                         |
| - GED                 | 17.6                  | 16.6                              | 14.4                               | 9.7                           |
| - HS Diploma          | 57.3                  | 59.5                              | 64.3                               | 78.3                          |
| General Detail Status |                       |                                   |                                    |                               |
| - Non General Detail  | 89.4                  | 88.6                              | 77.3                               | 86.3                          |
| - General Detail      | 10.6                  | 11.4                              | 22.7                               | 13.7                          |
| Rating                |                       |                                   |                                    |                               |
| - No Rating           | 47.9                  | 49.1                              | 64.0                               | 42.8                          |
| - Have rating         | 52.1                  | 50.9                              | 36.0                               | 37.2                          |
| Sex                   |                       |                                   |                                    |                               |
| - Male                | 96.8                  | 89.6                              | 86.7                               | 87.2                          |
| - Female              | 3.2                   | 10.4                              | 13.3                               | 12.8                          |
| Race                  |                       |                                   |                                    |                               |
| - White               | 79.4                  | 83.2                              | 81.6                               | 76.8                          |
| - Other               | 20.6                  | 16.8                              | 18.4                               | 23.2                          |
| Marital               |                       |                                   |                                    |                               |
| - Not Married         | 84.1                  | 78.6                              | 83.1                               | 78.3                          |
| - Married             | 15.9                  | 21.4                              | 16.9                               | 21.7                          |

TABLE IV-2

## Mean Values of Selected Variables

|  | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|--|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| Time Remaining on<br>Contract (months) | 22.6                  | 23.9                            | 20.1                            | 26.1                          |
| Active Duty Time<br>(months)           | 24.2                  | 27.0                            | 30.6                            | 23.4                          |
| Active Time Per<br>Grade (months)      | 7.27                  | 7.05                            | 7.16                            | 6.74                          |
| Age (years)                            | 21.4                  | 22.2                            | 22.5                            | 21.9                          |
| Disciplinary Actions<br>Per member     | .056                  | 1.085                           | .633                            | .022                          |
| AFQT Score                             | 54.3                  | 57.2                            | 58.2                            | 53.4                          |
| Numeric SCREEN 1                       | 81.6                  | 81.2                            | 82.1                            | 82.7                          |
| Numeric SCREEN 2                       | 78.0                  | 78.6                            | 78.9                            | 79.4                          |
| Years of Education                     | 11.6                  | 11.6                            | 11.7                            | 11.9                          |
| No. of Dependents<br>Per Member        | .310                  | .562                            | .510                            | .485                          |
| Lost Time Per<br>Member (days)         | 34.6                  | 88.2                            | 77.5                            | 34.4                          |



- Disciplinary Status: As demonstrated in the previous study, the UPGRADE subject tended, on average, to present a less severe discipline problem than the Early Discharge subject did. In fact, the UPGRADE population had about the same record as the Non-Discharge groups in terms of severe disciplinary problems.
- UA Incidence: UPGRADE 83 had a slightly higher overall UA rate than Early Discharge 83, but the latter had a worse record in terms of repeated UA offenses by the same individual and UA's occurring while the member is on active duty (as opposed to being on liberty or leave). Also, the UA record for UPGRADE 83 improved relative to UPGRADE 82/81.
- High School Completion: As in the previous study, a significantly lower percent of UPGRADE subjects had completed a regular high school diploma program compared to Early Discharge subjects.
- Timing of Discharge: UPGRADE 83 subjects were discharged, on average, earlier in their first-term enlistment period than Early Discharge subjects were. This result is in contrast to the previous study. The apparent explanation is that the eligible pool of UPGRADE candidates diminished due to the previous UPGRADE programs. Therefore, UPGRADE 83 subjects tended to be in the service for a shorter period of time.
- Sociodemographic Characteristics: As in the previous study, the UPGRADE population tended to be more similar to the Non-Discharge groups in terms of these characteristics. In contrast, UPGRADE groups tended to have, relative to Early Discharge:
  - Lower percent of female subjects
  - Higher percent of non-White subjects
  - Lower percent of married subjects
  - Fewer dependents per enlistee.

Overall, these results support the conclusion that even after repeated implementation UPGRADE in FY83 still did not have a significant substitution impact on the regular Early Discharge program. Like the previous study, certain important factors

distinguished the UPGRADE group from the Early Discharge groups.

On the other hand, we can witness some shifts occurring with UPGRADE 83 relative to the previous UPGRADE programs. For one, as shown in the previous section, the population size of the latest UPGRADE is significantly smaller. This result supports the "no substitution effect" conclusion if the pool of likely candidates for UPGRADE has diminished due to the previous UPGRADE programs. Another shift is that the UPGRADE 83 subjects were discharged, on average, earlier than either the previous UPGRADE subjects or the Early Discharge subjects. That is, a relatively greater proportion of them were discharged who had only six to 18 months of service completed. This result also is not surprising at all when one considers again that the pool of likely candidates for UPGRADE diminished. Still another shift along these same lines is that the percent of UPGRADE subjects with a high school diploma increased somewhat (but still much less than the Non-Discharge group), reflecting a diminished pool of candidates for UPGRADE.

#### B. Discipline

As in the previous study, the Early Discharge subject represented, on average, a more severe disciplinary problem than the UPGRADE subject did, as reflected in the number of officially recorded disciplinary actions taken against members (see Table IV-3). The rate of serious offenses per UPGRADE 83 members

TABLE IV-3

## Percent Distribution of Enlistees by Disciplinary Actions

| <u>No. of Major<br/>Disciplinary Actions</u> | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|--|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| 0  | 96.4                  | 75.6                            | 85.4                            | 98.2                          |
| 1  | 2.4                   | 4.9                             | 3.6                             | 1.6                           |
| 2  | 0.1                   | 2.9                             | 2.6                             | 0.2                           |
| 3  | 0.0                   | 1.2                             | 1.2                             | 0.0                           |
| 4  | 0.0                   | 2.7                             | 0.5                             | 0                             |
| 5  | 0.0                   | 3.1                             | 0.8                             | 0                             |
| 6  | 0                     | 3.1                             | 0.8                             | 0                             |
| 7  | 0                     | 2.2                             | 1.9                             | 0                             |
| 8  | 0                     | 1.6                             | 1.2                             | 0                             |
| 9 or more                                    | 0                     | 2.7                             | 1.9                             | 0                             |

remains very similar to the rates for the previous UPGRADE groups. Table IV-3 presents the percent distribution of enlistees by the number of major disciplinary actions taken against the individual.

Another variable which represents the magnitude of behavior/discipline problems in the study groups is the average number of lost days per member. The number of lost days per UPGRADE member was less than half the figure for the Early Discharge groups and nearly the same as that for the Non-Discharge group.\*

#### C. SCREEN

Another important variable examined in this study was the SCREEN (Success Chances of Recruits Entering the Navy). Table IV-4 presents the SCREEN table used by recruiters in qualifying applicants for enlistment in the Navy. The numeric scores in the table represent the relative chances of a recruit completing the first year of service based on education, AFQT score, and age. These scores were derived from empirical work originally performed by the Center for Naval Analyses (CNA) which related recruit characteristics to first-year survival rates.

The mean values of SCREEN scores for the study's comparison groups were presented previously in Table IV-2. The variable, Numeric SCREEN 1, is the screen score recorded in the EMR file for each individual enlistee. As a check on accuracy, Numeric

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\* While lost time includes sick time, the predominant portion of lost time can be attributed, on average, to unauthorized absences and discipline-related actions.

TABLE IV-4  
SUCCESS CHANCES FOR RECRUITS ENTERING THE NAVY (SCREEN)\*

| AFQT SCORE | AGE            | EDUCATION LEVEL                 |                              |         |
|------------|----------------|---------------------------------|------------------------------|---------|
|            |                | HIGH SCHOOL<br>DIPLOMA GRADUATE | GED/CPT/HOME<br>STUDY COURSE | NEITHER |
| 95 - 100   | 17 - 19<br>20+ | 93                              | 85                           | 77      |
|            |                | 90                              | 82                           | 74      |
| 67 - 94    | 17 - 19<br>20+ | 91                              | 83                           | 76      |
|            |                | 88                              | 79                           | 71      |
| 38 - 66    | 17 - 19<br>20+ | 88                              | 80                           | 73      |
|            |                | 84                              | 75                           | 67      |
| 19 - 37    | 17 - 19<br>20+ | 83                              | 75                           | 68      |
|            |                | 78                              | 70                           | 62      |
| 17 - 18    | 17 - 19<br>20+ | 75                              | 68                           | 62      |
|            |                | 69                              | 61                           | 56      |

\* Source: MAPMIS Systems Documentation Manual, NAVPERS 15,642.

SCREEN 2 is a reconstruction of the SCREEN based on the original CNA SCREEN table and the enlistee's individual characteristics. Our conclusion is that SCREEN has little capacity for distinguishing UPGRADE subjects from either Early Discharge or Non-Discharge enlistees. The mean values of either Numeric SCREEN 1 or SCREEN 2 for UPGRADE 83 are only slightly less than any of the comparison groups. If SCREEN is actually used for making recruiting decisions in marginal cases, then this result is not too surprising. After all, SCREEN during the recruiting process eliminates potential first year failures defined by SCREEN standards from statistical observation in this study.

The issue then becomes whether an alternative SCREEN index could be developed which effectively identifies the potential UPGRADE candidate. An alternative UPGRADE-related index would focus on 6 month to 3 year survivorship rather than one year as the current SCREEN does. Further, enlistee characteristics are likely to have different weighting factors in the alternative SCREEN index.

For example, high school diploma status might have a greater weight in an alternative SCREEN score for identifying potential UPGRADE subjects, relative to the current SCREEN index. In particular, the differences between current SCREEN scores for regular high school diploma graduates and GED graduates is about the same as the differences between SCORES for the GED level and neither GED nor high school diploma level. The UPGRADE analyses indicate that the differences in SCREEN scores between high school diploma

and GED should be relatively greater if probable UPGRADE candidates were to be screened prior to enlistment.

D. Race

Another important study issue is how minorities fared with Project UPGRADE. According to Table IV-1, 20.6 percent of the UPGRADE group were non-White compared to the 23.2 percent of the Non-Discharge group. The first-term enlisted population, in general, has about 20 or slightly higher percent non-Whites. Hence, it is evident that UPGRADE was even-handed in its treatment of minorities.

Table IV-5 breaks the non-White category into several more detailed categories. No significant difference in the respective distributions between the UPGRADE and Non-Discharge groups appears to be the case. Comparatively speaking, the Early Discharge groups have a lower representation of Blacks (and higher representation of Whites). These results are substantiated further by the discriminant analysis in Section V of this report.

E. Other Sociodemographic Characteristics

As in the previous study, the UPGRADE group tended to have greater similarity to the Non-Discharge group relative to the Early Discharge groups in terms of sociodemographic characteristics. An exception is sex. The percent of males in the

TABLE IV-5

## Percent Distribution of Enlistees by Race

|                 | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|-----------------|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| White           | 79.4%                 | 83.2%                           | 81.6%                           | 76.8                          |
| Black           | 16.2                  | 12.1                            | 13.1                            | 16.8                          |
| American Indian | 0.6                   | 0.7                             | 0.9                             | 0.4                           |
| Asian Pacific   | 0.1                   | 0                               | 0.1                             | 0.2                           |
| Filipino        | 0.2                   | 0.4                             | 0.5                             | 1.5                           |
| Hispanic        | 3.1                   | 3.2                             | 3.3                             | 4.0                           |
| Other           | 0.3                   | 0.4                             | 0.5                             | 3.0                           |
| Total           | 100                   | 100                             | 100                             | 100                           |



UPGRADE group was 96.8 percent, compared to 87.2 percent for the Non-Discharge group and 89.6 and 86.7 percent for Early Discharge 83 and 82, respectively. The higher percent for the UPGRADE group can be related to the result that a very high percent of UPGRADE subjects came from the sea duty environment.

The UPGRADE group had a relatively much lower percent of married subjects compared to either Early Discharge or Non-Discharge. The UPGRADE group also had a much lower average number of dependents (including spouse) per enlistee compared to any other comparison group. The Non-Discharge group had the highest percent of married enlistees, but the Early Discharge groups had the highest number of dependents per enlistee. Accompanying this is the result that the Early Discharge groups had a somewhat higher average age relative to either the UPGRADE or Non-Discharge groups.

#### F. Other Factors/Characteristics

Several other variables were investigated in the UPGRADE 83 analysis as well. As in the previous study, no important differences in these variables were found among the four study groups (see Tables IV-6 to IV-10). The results for these variables are summarized as follows:

- Training Status: The distribution of enlistees by training status was similar among three of the four study groups. One group, Early Discharge 82, had a relatively lower percent of A-school graduates and a higher percent of general detail subjects.

TABLE IV-6

## Percent Distribution of Enlistees by Training Status

|                | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|----------------|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| A-School Grad  | 74.7%                 | 74.1%                           | 64.1%                           | 76.1%                         |
| A-School Flunk | 1.4                   | 1.1                             | 0.8                             | 1.0                           |
| Inschool       | 1.5                   | 2.0                             | 2.3                             | 1.4                           |
| PSI            | 4.8                   | 4.2                             | 2.6                             | 4.2                           |
| Striker        | 7.1                   | 7.2                             | 7.6                             | 3.7                           |
| General Detail | 10.6                  | 11.4                            | 22.7                            | 13.7                          |
| Total          | 100                   | 100                             | 100                             | 100                           |

TABLE IV-7

## Percent Distribution of Enlistees by Occupational Area

|                      | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|----------------------|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| Non-Occupational     | 47.9%                 | 49.1%                           | 64.0%                           | 42.8%                         |
| Seamanship           | 1.4                   | 1.3                             | 1.1                             | 1.7                           |
| Electronic Repair    | 4.3                   | 4.4                             | 2.6                             | 5.1                           |
| Communications       | 7.2                   | 6.1                             | 5.3                             | 9.2                           |
| Medical              | 2.8                   | 3.6                             | 3.6                             | 4.5                           |
| Allied               | 0.4                   | 0.3                             | 0.3                             | 0.6                           |
| Administration       | 4.7                   | 5.6                             | 4.0                             | 5.5                           |
| Mechanical Repair    | 20.7                  | 19.5                            | 12.3                            | 23.6                          |
| Craftsmen            | 5.2                   | 4.2                             | 2.8                             | 4.1                           |
| Service and Supplies | 5.4                   | 5.8                             | 4.1                             | 2.9                           |
| Total                | 100                   | 100                             | 100                             | 100                           |

TABLE IV-8

Percent Distribution of Enlistees By Mental Group

|           | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|-----------|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| Group I   | 2.0%                  | 2.2%                            | 2.7%                            | 2.2%                          |
| Group II  | 26.5                  | 32.1                            | 33.6                            | 26.5                          |
| Group III | 53.6                  | 52.2                            | 50.5                            | 53.3                          |
| - III U   | 25.6                  | 26.4                            | 26.0                            | 26.8                          |
| - III L   | 28.0                  | 25.8                            | 24.6                            | 26.5                          |
| Group IV  | 17.4                  | 13.5                            | 13.1                            | 17.8                          |
| - IV A    | 10.1                  | 8.3                             | 8.4                             | 11.1                          |
| - IV B    | 5.5                   | 4.3                             | 3.8                             | 5.7                           |
| - IV C    | 1.8                   | .9                              | 0.9                             | 1.0                           |
| Group V   | .4                    | 0                               | 0.1                             | 0.1                           |
| Total     | 100                   | 100                             | 100                             | 100                           |

TABLE IV-9

## Percent Distribution of Enlistees by Recruiting Area

|        | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|--------|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| Area 1 | 22.3%                 | 21.2%                           | 20.5%                           | 20.2%                         |
| Area 3 | 15.3                  | 17.4                            | 16.8                            | 19.2                          |
| Area 4 | 20.7                  | 22.0                            | 20.3                            | 22.5                          |
| Area 5 | 14.3                  | 13.7                            | 14.8                            | 14.7                          |
| Area 7 | 12.5                  | 12.3                            | 13.2                            | 10.9                          |
| Area 8 | 14.9                  | 13.3                            | 14.3                            | 12.6                          |
| Total  | 100                   | 100                             | 100                             | 100                           |

Area 1: NY, CT, MA, NH, ME, RI, PA  
 3: GA, SC, FL, PR, TN, MS, AL, NC  
 4: OH, MI, IN, PA, VA, DC  
 5: IL, MO, WI, MN, NB, ND, IA, MO  
 7: NM, TX, CO, ARK, LA, OK  
 8: CA, OR, ID, UT, AR, HI, WA, AK, MT

TABLE IV-10

Percent Distribution of Enlistees By Term of Enlistment

| <u>Terms of<br/>Enlistment</u> | <u>UPGRADE<br/>83</u> | <u>Early Dis-<br/>charge 83</u> | <u>Early Dis-<br/>charge 82</u> | <u>Non-Dis-<br/>charge 83</u> |
|--------------------------------|-----------------------|---------------------------------|---------------------------------|-------------------------------|
| 2 years                        | 0.4%                  | 0.7%                            | 0.7%                            | 1.0%                          |
| 3 years                        | 0.3                   | 0.4                             | 0.5                             | 0.4                           |
| 4 years                        | 80.4                  | 96.7                            | 97.4                            | 97.3                          |
| 5 years                        | 0.2                   | 0.5                             | 0.2                             | 0.3                           |
| 6 years                        | 18.8                  | 1.6                             | 1.2                             | 1.1                           |
| Total                          | 100                   | 100                             | 100                             | 100                           |

- Occupational Area: No discernable pattern of differences among the comparison groups could be detected except that Early Discharge 83 had a higher percent for the non-occupational category.
- AFQT Scores/Mental Group: The average AFQT score for the UPGRADE group was actually slightly higher than the Non-Discharge group while the Early Discharge groups had somewhat higher averages than either UPGRADE or Non-Discharge. The distribution of UPGRADE subjects by mental group was remarkably similar to the distribution for the Non-Discharge group.
- Recruiting Area: No discernable pattern of differences was apparent among the study groups for this variable.
- Term of Enlistment: The percent of enlistees with a term of enlistment of six years was much higher for the UPGRADE group. As explained previously, the six year term is actually a three year term with the option to renew for three more years.

Although the simple bivariate analysis in this section indicated that AFQT scores were not a significant factor for distinguishing UPGRADE from Non-Discharge subjects, the multivariate discriminant analysis in the next section demonstrated that they were significant. That is, when other factors were taken into account (particularly NJP's), AFQT scores did have an effect.

## V. ANALYSIS OF SAMPLE MICROFICHE RECORDS

The objective of the microfiche records analysis was to provide analysis of relevant variables not available from the computerized data files (STF/EMR). These variables included:

- Performance evaluation marks, reflected by grade-point averages (GPA)
- Drug-related incidences
- Non-judicial punishments (NJP)
- UA's of less than 24 hours duration
- Prior arrest record

These variables permitted the research to focus more on marginal performance aspects of the enlistee's record, as opposed to severe disciplinary problems or the sociodemographic background of the enlistee. The analysis of these variables provided a means to further investigate the differences between UPGRADE and the study comparison groups.

Table V-1 reports the sizes of the microfiche record samples for the UPGRADE 83, Early Discharge 83, and Non-Discharge 83. Sample sizes were chosen to achieve 5 percent significance levels in making statistical inferences on the respective population groups (assuming, conservatively, relatively large variance in the parameters of interest to this study). The basic objective was to draw random samples which represented the population in terms of several multi-dimensional aspects, such as sea duty status, paygrade, high school diploma status, sex, and race.



TABLE V-1

Microfiche Record Sample Sizes of Study Groups

| <u>Group</u>       | <u>Sample Size</u> |
|--------------------|--------------------|
| UPGRADE 83         | 392                |
| Early Discharge 83 | 405                |
| Non-Discharge 83   | 389                |

Tables V-2 and V-3 demonstrate a strong similarity between the samples and population groups in terms of the distribution of these variables.

The comparative analysis of the selected microfiche-derived variables is presented in Tables V-4 and V-5. Overall, the results again pointed to the UPGRADE individuals as marginal performers. That is, the UPGRADE 83 group performed poorly than either comparison group in terms of GPA, UA's less than 24 hours, and NJP's. On the other hand, the Early Discharge group was worse in terms of incidence of drug use (see Table V-4) and severe disciplinary actions (see Section IV-B). Also, the UPGRADE 83 group had a better record than UPGRADE 82 or 81 in terms of GPA, UA's and NJP's (see the comparable results for UPGRADE 82 and 81 in Appendix A). This improvement can likely be attributed to a diminishing pool of probable candidates for UPGRADE, a conclusion pointed out in relation to other statistical results in the previous sections.

In Table V-5 the overall performance evaluation record is disaggregated into: professional performance; military behavior; military appearance; and adaptability. The "grades" for the UPGRADE group were consistently less than they are for the Early Discharge group. The grade differences for the two respective groups were greatest for "professional performance" and least for "military behavior." This result is consistent with the study's

TABLE V-2

Verification of Sample File Representativeness  
Against Population Groups:  
Comparison of Percent Distributions of Variables

|                     | UPGRADE 83 |        | EARLY DISCHARGE 83 |        | NON-DISCHARGE 83 |        |
|---------------------|------------|--------|--------------------|--------|------------------|--------|
|                     | POPULATION | SAMPLE | POPULATION         | SAMPLE | POPULATION       | SAMPLE |
| Sea Duty            |            |        |                    |        |                  |        |
| - Sea               | 84.8%      | 85.0%  | 48.1%              | 47.4%  | 71.9%            | 72.2%  |
| - Shore             | 15.2       | 15.0   | 51.9               | 52.6   | 28.1             | 27.8   |
| Paygrade            |            |        |                    |        |                  |        |
| - E-1               | 20.9       | 24.4   | 35.2               | 32.6   | 5.6              | 5.3    |
| - E-2               | 37.4       | 36.7   | 30.7               | 32.6   | 5.6              | 27.0   |
| - E-3 (or higher)   | 41.7       | 38.8   | 34.1               | 34.8   | 69.4             | 67.7   |
| High School Diploma |            |        |                    |        |                  |        |
| - GED or No Diploma | 42.7       | 41.5   | 40.5               | 41.4   | 21.7             | 20.1   |
| - HS Diploma        | 57.3       | 58.5   | 59.5               | 58.6   | 78.3             | 79.9   |
| Sex                 |            |        |                    |        |                  |        |
| - Male              | 96.8       | 95.5   | 89.6               | 88.0   | 87.2             | 78.0   |
| - Female            | 3.2        | 4.5    | 10.4               | 12.0   | 12.8             | 12.2   |
| Race                |            |        |                    |        |                  |        |
| - White             | 79.4       | 81.9   | 83.2               | 85.2   | 76.8             | 78.0   |
| - Other             | 20.6       | 18.1   | 16.8               | 14.8   | 23.2             | 22.0   |
| Marital             |            |        |                    |        |                  |        |
| - Not Married       | 84.1       | 83.5   | 78.6               | 81.0   | 78.3             | 79.1   |
| - Married           | 15.9       | 16.5   | 21.4               | 19.0   | 21.7             | 20.9   |

TABLE V-3

Verification of Sample File Representativeness  
Against Population Groups:  
Comparison of Mean Values of Variables

|   | <u>UPGRADE 83</u> |               | <u>EARLY DISCHARGE 83</u> |               | <u>NON-DISCHARGE 83</u> |               |
|---|-------------------|---------------|---------------------------|---------------|-------------------------|---------------|
|   | <u>POPULATION</u> | <u>SAMPLE</u> | <u>POPULATION</u>         | <u>SAMPLE</u> | <u>POPULATION</u>       | <u>SAMPLE</u> |
| TIME REMAINING<br>ON CONTRACT<br>(MONTHS) | 22.6              | 22.1          | 23.9                      | 24.5          | 26.1                    | 26.4          |
| AGE (YEARS)                               | 21.4              | 21.4          | 22.2                      | 22.1          | 21.9                    | 21.7          |
| DISCIPLINARY<br>ACTION PER<br>MEMBER      | 0.056             | 0.050         | 1.085                     | 1.035         | 0.022                   | 0.021         |
| AFQT SCORE                                | 54.3              | 55.1          | 57.2                      | 58.4          | 53.4                    | 53.8          |
| NO. OF<br>DEPENDENTS<br>PER MEMBER        | 0.310             | 0.336         | 0.562                     | 0.489         | 0.485                   | 0.442         |

TABLE V-4

Percent Distribution of Enlistees by  
Selected Variables Based on Microfiche Data

|                          | <u>UPGRADE 83</u> | <u>EARLY DISCHARGE 83</u> | <u>NON-DISCHARGE 83</u> |
|--------------------------|-------------------|---------------------------|-------------------------|
| PERFORMANCE GRADE        |                   |                           |                         |
| AVERAGE                  | 48.0%             | 39.8%                     | 30.4% <sup>2/</sup>     |
| - BELOW 3.0              | 52.0              | 60.2                      | 69.6                    |
| - 3.0 OR HIGHER          |                   |                           |                         |
| UAs LESS THAN            |                   |                           |                         |
| 24 HRS.                  |                   |                           |                         |
| - NONE                   | 55.5              | 65.4                      | 91.5                    |
| - ONE OR MORE            | 44.6              | 34.6                      | 8.5                     |
| NON-JUDICIAL             |                   |                           |                         |
| PUNISHMENT <sup>1/</sup> |                   |                           |                         |
| - NONE                   | 7.7               | 25.8                      | 69.2                    |
| - ONE                    | 19.4              | 17.1                      | 14.1                    |
| - TWO                    | 28.1              | 17.9                      | 10.8                    |
| - THREE OR MORE          | 44.8              | 39.2                      | 5.9                     |
| DRUG INCIDENCE           |                   |                           |                         |
| - NO POSSESSION OF       |                   |                           |                         |
| DRUGS                    | 63.1              | 54.5                      | 83.8                    |
| - ONE OR MORE TIMES      |                   |                           |                         |
| OF ILLEGAL               |                   |                           |                         |
| POSSESSION OF DRUGS      | 36.9              | 45.5                      | 16.2                    |
| PRIOR ARREST RECORD      |                   |                           |                         |
| - NO PRIOR ARREST        | 86.5              | 87.4                      | 89.5                    |
| - PRIOR ARREST           | 13.5              | 12.6                      | 10.5                    |

<sup>1/</sup> Includes UA's Less Than And Greater Than 24 Hours.

<sup>2/</sup> Based on only 23 available observations.

TABLE V-5

Mean Values of Selected Variables  
Based on Microfiche Data

|  | <u>UPGRADE 83</u> | <u>EARLY DISCHARGE 83</u> | <u>NON-DISCHARGE 83</u> |
|--|-------------------|---------------------------|-------------------------|
| UAs LESS THAN<br>24 HRS.               | 1.07              | 0.91                      | 0.21                    |
| NO. OF NJP'S<br>PER MEMBER             | 2.10              | 1.70                      | 0.53                    |
| OVERALL PERFORMANCE<br>EVALUATION      | 2.92              | 3.01                      | 3.07 <u>1/</u>          |
| PROFESSIONAL PERFORMANCE<br>EVALUATION | 2.90              | 3.07                      | 3.14 <u>1/</u>          |
| MILITARY BEHAVIOR<br>EVALUATION        | 2.70              | 2.73                      | 2.92 <u>1/</u>          |
| MILITARY APPEARANCE<br>EVALUATION      | 3.08              | 3.20                      | 3.23 <u>1/</u>          |
| ADAPTABILITY EVALUATION                | 2.97              | 3.11                      | 3.15 <u>1/</u>          |

1/ Based on only 23 available observations.

general observation that the UPGRADE case tends to be more of a performance or marginal behavior problem relative to a serious behavior problem. (With respect to the relative performance evaluation marks for the Non-Discharge group, the results are consistent with our expectations. However, only 23 microfiche records contained this information. This part of the microfiche record typically resides with the assigned unit of the active duty member rather than in the central file location).

The multivariate technique of discriminant analysis was applied in order to assess the relative importance of several variables in distinguishing the UPGRADE case from the Early Discharge case. This technique takes into account the simultaneous and potentially overlapping effects of these variables.

Table V-6A presents the standardized discriminant function coefficients for distinguishing UPGRADE 83 from Early Discharge 83. Table V-6B presents the definition of variables entered in the discriminant analysis. The absolute values (i.e., numeric values irrespective of positive or negative signs) of the standardized coefficients represent the contribution of their respective variables. The contribution of the variable to distinguishing between UPGRADE and Early Discharge subjects is greater, the

TABLE V-6A

Discriminant Analysis Of Upgrade 83 Vs  
Early Discharge 83 Based On Microfiche Data

| <u>DISCRIMINATING<br/>VARIABLE <sup>1/</sup></u> | <u>STANDARDIZED DISCRIMINANT<br/>COEFFICIENT <sup>2/</sup></u> |
|--|--|
| SEA VS SHORE DUTY                                | .59  |
| DRUG   | .59  |
| DISCIPLINE                                       | .40  |
| AFQT   | .20  |
| PERFORMANCE EVALUATION                           | .18  |
| SEX  | .18  |
| NJP  | -.17   |
| UA   | -.16   |
| RACE   | - <u>3/</u>  |
| HS DIPLOMA                                       | - <u>3/</u>  |
| DEPENDENTS                                       | - <u>3/</u>  |
| <sup>3/</sup> Cases Correctly Classified         | 70%  |

1/ See Table V-6B for definitions of variables.

2/ The absolute values of the standardized coefficients represent the relative contribution of their associated variables. The higher the absolute value, the greater the contribution.

3/ Does not meet tolerance levels to be entered into the discriminant function.



TABLE V-6B

Definition of Variables in the Discriminant Analysis

|                          |   |
|--------------------------|---|
| SEA =                    | 0 for sea duty,<br>1 for shore duty                                     |
| DRUG =                   | Number of drug-related incidents  |
| DISCIPLINE =             | Number of disciplinary actions<br>in end-of-quarter records             |
| AFQT =                   | Actual numerical AFQT score   |
| PERFORMANCE EVALUATION = | Member's performance evaluation<br>grade                                |
| SEX =                    | 0 for male,<br>1 for female   |
| NJP =                    | Number of non-judicial punish-<br>ments                                 |
| UA =                     | Number of UA incidents (less<br>than 24 hours)                          |
| RACE =                   | 0 for Caucasian,<br>1 for other   |
| HS DIPLOMA               | 0 for high school not completed<br>or GED,<br>1 for high school diploma |
| DEPENDENTS               | Number of dependents, including<br>spouse                               |

higher the absolute value of its coefficient.<sup>1/</sup> The sea/shore duty status and disciplinary status variables, for example, contributed greatly to identifying the subject as UPGRADE or Early Discharge. More specifically, enlistees on sea duty and/or having disciplinary records clear of major infractions have a greater likelihood to be in the UPGRADE group rather than the Early Discharge group.

The variable DRUG also has a relatively great amount of discriminating power in distinguishing UPGRADE 83 from Early Discharge 83. In particular, the member with the worse drug-related record is more likely to be an Early Discharge case rather than an UPGRADE one. This result is contrary to our findings for UPGRADE 81 and 82 whereby drug-related incidents were notably higher, particularly for UPGRADE 82. UPGRADE 82 happened to coincide with the CNO's major drug initiative in 1982, as pointed out in the previous UPGRADE study.

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<sup>1/</sup> A positive sign in Table V-6A indicates that a higher positive value of the variable identifies the subject's group as Early Discharge. Alternatively, a lower value (e.g., negative relative to positive value) of the variable identifies the subject's group as UPGRADE. For example, the variable Sea has a value of 0 for sea duty status and 1 for shore duty. The positive sign of the variable Sea in Table V-6A indicates that the variable's value of 1 (shore) identifies the subject as an Early Discharge group member while the value of 0 (Sea) identifies the subject as an UPGRADE group member.

The other variables in the discriminant analysis have relatively less discriminating power, but the direction of the effects are as expected. In particular, lower AFQT scores and performance evaluation marks and worse NJP and UA records tend to identify the case as UPGRADE rather than Early Discharge. Also, the female sex tends to identify the case as not UPGRADE. The variables RACE, HS DIPLOMA, and DEPENDENTS had no discriminating power after the other variables were entered into the discriminant function.

Discriminant analysis was also used to distinguish both UPGRADE 83 and Early Discharge 83 from Non-Discharge 83. Table V-7 presents the results of this analysis. <sup>1/</sup> NJP has the most discriminating power to distinguish both early attrition groups from the Non-Discharge group. In addition, discipline, sea vs. shore duty, and drug have significant discriminating power for Early Discharge vs. Non-Discharge, but little or no significance for UPGRADE vs. Non-Discharge. This result points again to UPGRADE as a program which discharges the "marginal" individual.

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<sup>1/</sup> The performance evaluation variable could not be entered into this particular analysis due to its missing observations for the Non-Discharge group.

TABLE V-7

Discriminant Analysis of Non-Discharge 83  
Based on Microfiche Data

| Discriminating<br>Variable   | Standardized Discriminant Coefficient |                    |
|------------------------------|---------------------------------------|--------------------|
|                              | Non-Discharge 83 VS                   |                    |
|                              | UPGRADE 83                            | Early Discharge 83 |
| NJP                          | .97                                   | .69                |
| HS DIPLOMA                   | -.18                                  | -.12               |
| AFQT                         | -.10                                  | - <u>1</u> /       |
| DISCIPLINE                   | .08                                   | .34                |
| SEA VS SHORE DUTY            | - <u>1</u> /                          | .51                |
| DRUG                         | - <u>1</u> /                          | .34                |
| SEX                          | - <u>1</u> /                          | .12                |
| UA                           | - <u>1</u> /                          | .08                |
| DEP                          | - <u>1</u> /                          | - <u>1</u> /       |
| RACE                         | - <u>1</u> /                          | - <u>1</u> /       |
| % Cases Correctly Classified | 79%                                   | 78%                |

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1/ Does not meet minimum tolerance levels to be entered into the discriminant function.

APPENDIX A  
SELECTED STATISTICS FROM  
UPGRADE 81 AND 82 STUDY

TABLE III-1

Percent Distribution of Enlistees by Selected Variables

|                      | UPGRADE<br>81 | UPGRADE<br>82 | Early Dis-<br>charge I | Early Dis-<br>charge II | Non-Dis-<br>charge 81 | Non-Dis-<br>charge 80 |
|----------------------|---------------|---------------|------------------------|-------------------------|-----------------------|-----------------------|
| Active Duty          |               |               |                        |                         |                       |                       |
| - 6 to 18 mos.       | 34.8%         | 38.1%         | 41.0%                  | 43.5%                   | 34.4%                 | 66.5%                 |
| - 19 to 30 mos.      | 38.9          | 38.1          | 31.7                   | 30.9                    | 30.2                  | 16.8                  |
| - More than 30 mos.  | 26.3          | 23.8          | 27.4                   | 25.6                    | 35.5                  | 16.7                  |
| Pay Grade            |               |               |                        |                         |                       |                       |
| - E1                 | 32.2          | 25.2          | 35.0                   | 30.7                    | 29.4                  | 19.6                  |
| - E2                 | 39.6          | 40.1          | 35.0                   | 34.4                    | 24.3                  | 15.3                  |
| - E3 (or higher)     | 28.3          | 34.7          | 30.0                   | 35.0                    | 46.3                  | 65.2                  |
| Sea Duty             |               |               |                        |                         |                       |                       |
| - Sea                | 78.8          | 80.2          | 39.3                   | 37.4                    | 45.5                  | 50.8                  |
| - Shore              | 21.2          | 19.8          | 60.7                   | 62.6                    | 54.5                  | 49.2                  |
| Disciplinary Actions |               |               |                        |                         |                       |                       |
| - None               | 94.6          | 94.8          | 75.1                   | 79.3                    | 95.1                  | 93.7                  |
| - One or more        | 5.4           | 5.2           | 24.9                   | 20.7                    | 4.9                   | 6.3                   |
| UA Incidence         |               |               |                        |                         |                       |                       |
| - None               | 58.5          | 76.1          | 65.9                   | 69.3                    | 89.7                  | 87.5                  |
| - One or more        | 41.5          | 23.9          | 34.1                   | 30.7                    | 10.3                  | 12.5                  |
| UA Type              |               |               |                        |                         |                       |                       |
| - Liberty            | 60.3          | 56.4          | 51.4                   | 52.0                    | 55.2                  | 52.4                  |
| - Leave              | 4.0           | 4.5           | 3.9                    | 5.0                     | 8.3                   | 6.3                   |
| - Duty               | 35.6          | 39.1          | 44.7                   | 43.0                    | 36.5                  | 41.3                  |
| High School Diploma  |               |               |                        |                         |                       |                       |
| - No Diploma         | 35.6          | 31.7          | 28.3                   | 23.7                    | 16.0                  | 17.1                  |
| - GED                | 12.7          | 14.2          | 14.1                   | 14.1                    | 8.1                   | 8.7                   |
| - HS Diploma         | 51.7          | 54.1          | 57.6                   | 62.3                    | 76.0                  | 74.2                  |

TABLE III-1

Percent Distribution of Enlistees by Selected Variables (Cont'd)

|                              | UPGRADE<br>81 | UPGRADE<br>82 | Early Dis-<br>charge I | Early Dis-<br>charge II | Non-Dis-<br>charge 81 | Non-Dis-<br>charge 80 |
|------------------------------|---------------|---------------|------------------------|-------------------------|-----------------------|-----------------------|
| <b>General Detail Status</b> |               |               |                        |                         |                       |                       |
| - Non General Detail         | 66.8          | 67.4          | 66.3                   | 67.6                    | 70.6                  | 69.4                  |
| - General Detail             | 33.2          | 32.6          | 33.7                   | 32.4                    | 29.4                  | 30.6                  |
| <b>Rating</b>                |               |               |                        |                         |                       |                       |
| - No Rating                  | 54.9          | 50.9          | 56.1                   | 54.0                    | 51.3                  | 51.3                  |
| - Have rating                | 45.1          | 49.1          | 43.9                   | 46.0                    | 48.7                  | 48.7                  |
| <b>Sex</b>                   |               |               |                        |                         |                       |                       |
| - Male                       | 95.6          | 97.0          | 85.2                   | 81.9                    | 89.2                  | 90.9                  |
| - Female                     | 4.4           | 3.0           | 14.8                   | 18.1                    | 10.8                  | 9.1                   |
| <b>Race</b>                  |               |               |                        |                         |                       |                       |
| - White                      | 78.7          | 80.5          | 84.8                   | 83.5                    | 80.3                  | 79.1                  |
| - Other                      | 21.3          | 19.5          | 15.2                   | 16.5                    | 19.7                  | 20.9                  |
| <b>Marital</b>               |               |               |                        |                         |                       |                       |
| - Not Married                | 83.5          | 85.7          | 78.1                   | 78.9                    | 85.4                  | 84.6                  |
| - Married                    | 14.5          | 14.3          | 21.9                   | 21.1                    | 14.6                  | 15.4                  |

TABLE III-2

## Mean Values of Selected Variables

|  | UPGRADE<br>81 | UPGRADE<br>82 | Early Dis-<br>charge I | Early Dis-<br>charge II | Non-Dis-<br>charge 81 | Non-Dis-<br>charge 80 |
|--|---------------|---------------|------------------------|-------------------------|-----------------------|-----------------------|
| Time Remaining on<br>Contract (months) | 21.9          | 23.0          | 26.1                   | 26.7                    | 22.9                  | 36.6                  |
| Active Duty Time<br>(months)           | 24.1          | 23.5          | 23.6                   | 22.9                    | 26.4                  | 17.0                  |
| Active Time Per<br>Grade (months)      | 14.1          | 12.4          | 14.6                   | 13.9                    | 13.2                  | 7.6                   |
| Age (years)                            | 21.2          | 21.2          | 21.7                   | 21.6                    | 21.9                  | 20.9                  |
| Age At Time<br>of Entry                | 19.2          | 19.3          | 19.8                   | 19.7                    | 19.7                  | 19.4                  |
| UA's Per Member                        | 1.34          | 0.59          | 1.18                   | 1.02                    | 0.27                  | 0.36                  |
| UA Days Per Member                     | 10.90         | 4.73          | 9.85                   | 8.75                    | 2.09                  | 2.91                  |
| Disciplinary Actions<br>Per Member     | .089          | .079          | .828                   | .705                    | .147                  | .209                  |
| AFQT Score                             | 56.6          | 56.5          | 58.8                   | 60.0                    | 58.3                  | 57.2                  |
| Numeric Screen                         | 80.3          | 81.0          | 81.6                   | 82.6                    | 83.2                  | 81.4                  |
| Years of Education                     | 11.4          | 11.4          | 11.5                   | 11.6                    | 11.8                  | 11.8                  |
| No. of Dependents                      | .266          | .252          | .668                   | .692                    | .316                  | .305                  |



TABLE III-16

Percent Distribution of Enlistees by  
Selected Variables Based on Microfiche Data

|                           | <u>UPGRADE 81</u> | <u>UPGRADE 82</u> | <u>EARLY DISCHARGE II</u> |
|---------------------------|-------------------|-------------------|---------------------------|
| PERFORMANCE GRADE         |                   |                   |                           |
| AVERAGE                   |                   |                   |                           |
| - BELOW 3.0               | 59.3%             | 59.4%             | 35.4%                     |
| - 3.0 OR HIGHER           | 40.5              | 40.5              | 64.4                      |
| UAS LESS THAN             |                   |                   |                           |
| 24 HRS.                   |                   |                   |                           |
| - NONE                    | 53.6              | 63.9              | 72.3                      |
| - ONE OR MORE             | 46.4              | 36.1              | 27.7                      |
| NON-JUDICIAL              |                   |                   |                           |
| PUNISHMENT <u>1/</u>      |                   |                   |                           |
| - NONE                    | 5.9               | 8.7               | 32.4                      |
| - ONE                     | 17.3              | 18.6              | 18.9                      |
| - TWO                     | 22.9              | 27.9              | 16.2                      |
| - THREE OR MORE           | 53.9              | 44.8              | 32.4                      |
| DRUG INCIDENCE            |                   |                   |                           |
| - NO POSSESSION OF        |                   |                   |                           |
| DRUGS                     | 63.2              | 55.6              | 71.4                      |
| - ONE OR MORE TIMES       |                   |                   |                           |
| OF ILLEGAL                |                   |                   |                           |
| POSSESSION OF DRUGS       | 36.8              | 44.4              | 28.6                      |
| PARENTAL STATUS <u>2/</u> |                   |                   |                           |
| - SAME ADDRESS            | 72.0              | 68.0              | 70.7                      |
| - DIFFERENT ADDRESSES     | 28.0              | 32.0              | 29.3                      |

1/ Includes UAS Less Than And Greater Than 24 Hours.

2/ Proxy For Marital Status of Enlistee's Parents.

TABLE III-17  
Mean Values of Selected Variables

|                              | Based on Microfiche Data |                   |                           |
|------------------------------|--------------------------|-------------------|---------------------------|
|                              | <u>UPGRADE 81</u>        | <u>UPGRADE 82</u> | <u>EARLY DISCHARGE II</u> |
| PERFORMANCE GRADE<br>AVERAGE | 2.78                     | 2.84              | 2.99                      |
| UAs LESS THAN<br>24 HRS.     | 1.23                     | .86               | .60                       |
| NO. OF NJP'S<br>PER MEMBER   | 2.25                     | 2.09              | 1.49                      |

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Manpower R&D Program - List B

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Commanding Officer  
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NAS Mayport, FL 32228

Director, Organizational Effectiveness  
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Commanding Officer  
Organizational Effectiveness Center  
Pearl Harbor, HI 96860

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Commanding Officer  
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Naval Base, Charleston, SC 29408

Commanding Officer  
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NAB Little Creek  
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Commander  
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Commander in Chief U.S. Naval Forces  
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